

REMARKS

Applicant hereby withdraws its earlier submitted amendments to Tables 1 and 2 in light of the disclosure in the specification at page 9, lines 5-8. In a telephonic interview with the Examiner on June 18, 2004, the Examiner stated that the data in Tables 1 and 2 were clear, but suggested that the term "Neutral Detergent Fiber" be added to Tables 1 and 2, and an amendment to the specification is submitted herewith.

In the telephonic interview, the Examiner requested additional information regarding the term "lysolecithin." Although this term has been removed from the claims by the foregoing amendment, a description of lysolecithin as used in the specification may be made by reference to the article Sas, B., Peys, E. and Helsen M. 1999 Efficient method for (lyso)phospholipid class separation by high-performance liquid chromatography using an evaporative light-scattering detector. J. Chromatography A, 864:1:179-182 referred to on page 4 of the specification and U.S. Patent No. 6,068,997 referred to in footnote 5 to Table 2. In summary, lysolecithin refers to a product of the enzymatic conversion of lecithin to enrich it in the amounts of lysophospholipids.

Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bedford *et al.* taken with Garnett *et al.* and Baisted. This ground of rejection of the claims is respectfully traversed in view of the foregoing claim amendments and these remarks. Reconsideration and withdrawal of the rejection is respectfully requested.

Claim 1 has been amended to recite that the claimed method is directed to an improvement in the degradation of neutral detergent fiber by exogenous enzymes added to an animal feed when a surfactant selected from the group consisting of lecithins that have been enzymatically enriched in the amounts of lysophospholipids has also been added. The claim also recites that the lecithins have been enriched in the amounts of lysophospholipids to a level where the lysophospholipids are present in at least 5% by weight compared to the total of lysophospholipids plus phospholipids. The value of 5% by weight is supported by the specification. Specifically, in the paragraph bridging pages 4 and 5, both Lysoprin and Bolec MT are recited to be crude lecithin which has been enzymatically enriched in lysophospholipids (lysophosphatidylcholine in the case of Lysoprin and lysophosphatidic acid, lysophosphatidylethanolamine, lysophosphatidylinositol, and lysophosphatidylcholine in the case of Bole MT) and further that they were determined to have approximately 33%

lysophospholipids. In addition, footnote 3 of Table 1 recites that S2 is a surfactant containing approximately 16% Lysoprin, and footnote 3 of Table 2 recites that S3 is a surfactant containing approximately 16% Bolec MT. Accordingly, S2 and S3 each contain approximately 33% times 16% or 5% lysophospholipids. Claim 2 has been amended to correct the spelling of "cellulose". Claims 2-7 are dependent on claim 1.

New claim 10 has been added to the application. Claim 10 is dependent on claim 1 and quantifies the enhanced degradation of neutral detergent fiber by the exogenous enzyme when the surfactant is added. It recites that degradation is increased by at least 50% over degradation by the exogenous enzyme alone. This quantification of the enhanced NDF degradation is supported by the specification. Specifically, in Table 2, the degradation of neutral detergent fiber by the exogenous enzyme ENZ-Xylanase at 250 Kg/T and the surfactant Tween (not a converted lecithin) resulted in an NDF degradation of 2.89%, whereas the ENZ-Xylanase at 250 Kg/T combined with 250 Kg/T of the surfactant S4 resulted in an NDF degradation of 10.72%.

Claim 11 has been added to the application. Claim 11 is a dependent on claim 1 and is directed to the aspect of the invention that the degradation of neutral detergent fiber can be further increased by adding an exogenous protease to the non-protease exogenous enzyme. Claim 11 is supported by the specification. Specifically, in Table 2, last three rows, which shows that the degradation of NDF by the exogenous enzyme ENZ-Xylanase is increased by adding a protease. Claim 12 is dependent on claim 11 and recites that the protease is added in an amount between about 0.1% and about 1.0% by weight of the amount of exogenous enzyme and surfactant. Claim 12 is supported by the specification. Specifically, in the last three rows of Table 2, the amount of protease added is 0.1% by weight (0.5 Kg/T protease added to 250 Kg/T ENZ-Xylanase and 250 Kg/T surfactant), 0.5% by weight (2.5 Kg/T protease added to 250 Kg/T ENZ-Xylanase and 250 Kg/T surfactant), and 1.0% by weight (5.0 Kg/T protease added to 250 Kg/T ENZ-Xylanase and 250 Kg/T surfactant).

Claim 13 has been added to the application. Claim 13 is an independent claim directed to the aspect of the invention that the amount of exogenous enzyme required to achieve a preselected level of NDF degradation can be reduced by adding a surfactant selected from the group consisting of lecithins that have been enzymatically enriched in the amounts of lysophospholipids to contain at least 5% by weight of lysophospholipids to lysophospholipids plus phospholipids, and wherein the amount of the enzyme added is reduced by greater than 2up

to about 50% without a reduction in degradation of neutral detergent fiber. Claim 13 is supported by the specification. Specifically, in Table 2, the NDF degradation by the use of the exogenous enzyme ENZ-Barley at a level of 500 Kg/T was 5.10% and the NDF degradation by the use of the exogenous enzyme ENZ-Barley at a level of 250 Kg/T with the addition of surfactant S2 at 250 Kg/T resulted in the same 5.10%.

This method is neither anticipated nor made obvious by the cited references, either singly or in combination. Bedford *et al.* teaches the use of a multi-enzyme product in cereal-based poultry and swine feeds to improve the feed conversion ratio; no lecithins enzymatically enriched in lysophospholipids are used. Garnett *et al.* teaches the use of lysolecithin to increase the uptake of nutrients from an animal feed and describes lysolecithin as a growth promoter but teaches nothing whatsoever about the effect of lysolecithin on the degradation of neutral detergent fiber by exogenous enzymes. Both of these references, accordingly, are directed to the effect of a feed additive as an animal growth promoter and direct stimulator of animal performance. Neither reference teaches anything whatsoever about the surprising result of the present invention in improving the degradation of neutral detergent fiber as recited in the amended claims of the present invention; indeed, there is absolutely no mention whatsoever in either reference to neutral detergent fiber.

Lysophospholipids are present in all types of biological tissues. The Baisted article discloses the mobilization of starch in cereal grains, a phenomenon that is mainly followed by a decrease in starch-bound lysophospholipid content of the endosperm tissue of the cereal grains. The article teaches nothing whatsoever about increasing the effectiveness of an enzyme on degradation of neutral detergent fiber in an animal feed.

Accordingly, none of the cited references contains any disclosure whatsoever with respect to neutral detergent fiber, much less improving the activity of enzymes in degrading neutral detergent fiber present in animal feeds.

The application has been amended to correct minor informalities, to further distinguish the application over the prior art, and to more particularly point out and distinctly claim the subject matter which Applicant regards as the invention so as to place the application, as a whole, into a prima facie condition for allowance. Great care has been taken to avoid the introduction of new subject matter into the application as a result of the foregoing modifications.

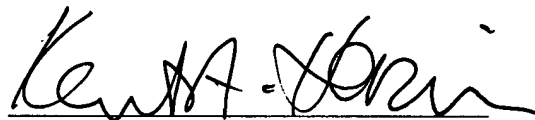
Accordingly, the purpose of the claimed invention is not taught nor suggested by the cited references, nor is there any suggestion or teaching which would lead one skilled in the relevant art to combine the references in a manner which would meet the purpose of the claimed invention. Because the cited references, whether considered alone, or in combination with one another, do not teach nor suggest the purpose of the claimed invention, Applicant respectfully submits that the claimed invention, as amended, patentably distinguishes over the prior art, including the art cited merely of record.

Based on the foregoing, Applicant respectfully submits that its claims 1-7 and 10-13, as amended, are in condition for allowance at this time, patentably distinguishing over the cited prior art. Accordingly, reconsideration of the application and passage to allowance are respectfully solicited.

The Examiner is respectfully urged to call the undersigned attorney at (515) 288-2500 to discuss the claims in an effort to reach a mutual agreement with respect to claim limitations in the present application which will be effective to define the patentable subject matter if the present claims are not deemed to be adequate for this purpose.

Respectfully submitted,

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Kent A. Herink
Registration No. 31,025
DAVIS, BROWN, KOEHN,
SHORS & ROBERTS, P.C.
666 Walnut St., Suite 2500
Des Moines, Iowa 50309
Telephone: (515) 288-2500

ATTORNEYS FOR APPLICANT